

REMARKS

Claims 1-3 and 9-11 are pending in this application. By this Amendment, claim 4 is canceled without prejudice to or disclaimer of the subject matter recited therein. Claim 1 is amended and claims 10 and 11 are added. No new matter is added.

I. Information Disclosure Statements

Applicant respectfully requests acknowledgement of receipt and consideration of the references listed on the Information Disclosure Statements submitted to the U.S. Patent and Trademark Office on February 10, 2006 and March 21, 2006.

II. Claim Rejections Under 35 U.S.C. §103

Claims 1-4 and 9 are rejected under 35 U.S.C. §103(a) as unpatentable over JP 2002-3000756 to Akichika in view of JP 64-8872 (JP 872). As claim 4 is canceled, the rejection of that claim is moot. The rejection of claims 1-3 and 9 is respectfully traversed.

Neither Akichika or JP 872 disclose, whether considered alone or in combination, or suggest each and every feature recited in the rejected claims as amended. For example, the combination of references fails to disclose or suggest an ac generator for a vehicle, comprising: a housing including a drive frame, a rear frame and a rear cover; a rotor, supported by said housing, for providing a magnetic field; a cooling fan fixed to said rotor for taking cooling air from outside of the rear cover; a stator, supported by said housing and disposed around said rotor, said stator having a stator core in which a plurality of phase-windings is mounted to generate multi-phase electromotive forces when the magnetic field is supplied; and a multi-phase full-wave rectifying unit disposed in the rear cover and formed by a bridge circuit which includes a plurality of input terminals respectively connected to the plurality of phase-windings, a positive output terminal, a negative output terminal, positive electrode side rectifying elements having one ends respectively connected to the input terminals and the other ends connected to the positive output terminal, negative electrode side

rectifying elements having one ends respectively connected to the input terminals and the other ends connected to the negative output terminal, a semicircular positive electrode side heat sink to which the positive electrode side rectifying elements are fixed and a semicircular negative electrode side heat sink to which the negative electrode side rectifying elements are fixed, said positive electrode side heat sink and said negative electrode side heat sink being respectively disposed in two planes that are perpendicular to a rotation axis of said rotor, wherein said negative electrode side heat sink comprises a pair of separate semicircular plates that have a larger outside diameter than the positive electrode side heat sink to utilize cooling air taken by said cooling fan from outside of the rear cover, and wherein one of the negative electrode side rectifying elements is constituted of parallelly connected two elements that are respectively fixed to the semicircular plates to equally divide current flowing through one of the input terminals, as recited in amended claim 1.

Akichika discloses a rectifier unit including three parallelly connected diodes that are fixed to the negative electrode side heat sink that is divided into two plates. The structure of Akichika is intended to prevent distortion of a negative electrode side heat sink (paragraph [0006]). Accordingly, the structure of Akichika does not reduce the increase in temperature of a negative electrode side heat sink that is exposed to a higher temperature than a positive electrode side heat sink. Additionally, there is no disclosure or suggestion in Akichika that the capacity of any one of the parallelly connected diodes is smaller than the other diodes.

It is admitted in the Office Action that Akichika fails to disclose one of the negative electrode side rectifying elements connected to at least a portion of the plurality of the phase-windings that is constituted of a parallelly connected two elements that are respectively fixed to the semicircular members to equally divide current flowing therethrough. In an effort to overcome the admitted deficiency, JP 872 is combined for allegedly showing such a feature.

However, JP 872 fails to disclose the feature as alleged in the Office Action or as further recited in the claim as amended.

JP 872 discloses a pair of zener diodes d31 and d32, the junction of which is connected to the neutral point of the Y-connected three-phase stator winding (See Fig. 1). Although the diode d32 is a negative electrode side diode, the diode d32 does not share a portion of current with any one of the negative electrode side diodes d21-d23 flowing through one of the input terminals (i.e., the neutral point). In other words, the diode d32 and any one of the diodes d21-d23 do not divide current flowing through one of the input terminals. Accordingly, the arrangement shown in JP 872 does not reduce a temperature increase of a negative electrode side heat sink that is exposed to a higher temperature than a positive electrode side heat sink. Additionally, there is no disclosure or suggestion in JP 872 that the capacity of the diode d32 is smaller than the other diodes d21-d23. Accordingly, JP 872 does not overcome the deficiencies of Akichika. Thus, the combination of references fails to render the subject matter of the rejected claims obvious. Withdrawal of the rejection of claims 1-4 and 9 under 35 U.S.C. §103(a) is respectfully requested.

III. New Claims

None of the applied references, whether considered alone or in combination, disclose or suggest each and every feature recited in claims 10 and 11. For example, the combination of references fails to disclose or suggest an ac generator for a vehicle comprising: a housing; a rotor for providing a magnetic field; a stator, having a stator core supported by said housing and a plurality of phase-windings; and a multi-phase full-wave rectifying unit including a bridge circuit of positive electrode side rectifying elements and a negative electrode side rectifying elements, a semicircular positive electrode side heat sink to which the positive electrode side rectifying elements are fixed at one ends thereof, a semicircular negative electrode side heat sink to which the negative electrode side rectifying elements are fixed at one ends thereof, a plurality

of input terminals connected to the positive electrode side rectifying elements at the other ends thereof and the negative electrode side rectifying elements at the other ends thereof, a positive output terminal connected to the positive electrode side heat sink, and a negative output terminal connected to the negative electrode side heat sink, wherein said negative electrode side heat sink comprises a pair of separate semicircular plates that have a larger outside diameter than the positive electrode side heat sink, and wherein one of the negative electrode side rectifying elements is constituted of parallelly connected two elements each of which has a smaller capacity than other elements and is fixed to different one of the semicircular plates to equally divide current flowing through one of the input terminals.

Moreover, the combination of references fails to disclose or suggest an ac generator for a vehicle comprising: a housing; a rotor, supported by said housing, for providing a magnetic field; a stator, having a stator core and a plurality of phase-windings to generate a plurality of phase current when the magnetic field is supplied; and a multi-phase full-wave rectifying unit including a plurality of series circuits of a positive electrode side rectifying element and a negative electrode side rectifying element, a semicircular positive electrode side heat sink to which the positive electrode side rectifying elements are fixed at one ends of the series circuits and a semicircular negative electrode side heat sink to which the negative electrode side rectifying elements are fixed at the other ends of the series circuits, a plurality of input terminals each of which is connected to one of the plurality of phase-windings and to a junction of the series circuits of the positive electrode side rectifying element and the negative electrode side rectifying element, a positive output terminal connected to the positive electrode side heat sink, a negative output terminal connected to the negative electrode side heat sink, wherein said negative electrode side heat sink comprises a pair of separate semicircular plates that have a larger outside diameter than the positive electrode side heat sink, and wherein one of the negative electrode side rectifying elements is constituted of parallelly connected two elements

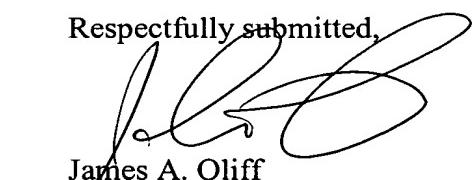
one of which is a zener diode fixed to one of the semicircular plates, and the other of the two elements is fixed to the other of the semicircular plates to equally divide one of the phase currents flowing therethrough.

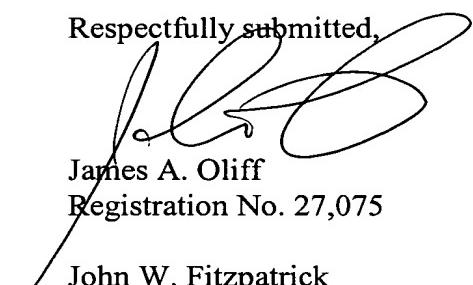
IV. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1-3 and 9-11 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,


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